

IN THE CLAIMS

Claim 1 has been amended as follows:

1. (Currently amended) An antenna element for magnetic resonance applications comprising:

[[a]] an antenna element sub-section extending along a section axis;

an auxiliary circuit disposed adjacent to said antenna element sub-section, said auxiliary circuit comprising a coupling section and an auxiliary circuit section;

said auxiliary circuit being inductively coupled to said antenna element sub-section by said coupling section, and said auxiliary circuit section proceeding parallel to said antenna element sub-section at a larger distance from said section axis than said coupling section; and

said auxiliary circuit comprising controllable tuning elements ~~each~~ connected between said auxiliary circuit section and said coupling section, having [[a]] respective non-coinciding first, second and third control state states, the respective control states being selectively controllable to cause a radio frequency excitation current flowing in said antenna element sub-section to produce, ~~at respectively different times dependent on the representative control states each of~~ an auxiliary current in said auxiliary current section ~~leading~~ that leads said excitation current when said tuning elements are in said first control state, [[or]] and an auxiliary current in said auxiliary current section ~~lagging~~ that lags said excitation current when said tuning elements are in said second control state, [[or]] and no auxiliary current in said

auxiliary circuit section when said tuning elements are in said third control state.

Claim 2 has been amended as follows:

2. (Currently Amended) An antenna element as claimed in claim 1 wherein said coupling section is a component of said antenna element sub-section.

Claim 3 has been amended as follows:

3. (Currently amended) An antenna element as claimed in claim 1 wherein said coupling section is a different element from said antenna element sub-section[.].

Claim 4 has been amended as follows:

4. (Currently amended) An antenna element as claimed in claim 1 wherein said antenna element sub-section is a first antenna element sub-section, said auxiliary circuit is a first auxiliary circuit, said coupling section is a first coupling section, said auxiliary circuit section is a first auxiliary circuit section, and said controllable tuning elements are first controllable first tuning elements, and wherein said antenna element further comprises:

a second antenna element sub-section axially offset from said first antenna element sub-section;

a second auxiliary circuit adjacent to said second antenna element sub-section;

said second auxiliary circuit comprising a second coupling section and a second auxiliary circuit section;

said second auxiliary circuit being inductively coupled to said second sub-section by said second coupling section, and said second auxiliary

circuit section proceeding parallel to said second antenna element sub-section at a larger distance from said section axis than said second coupling section; and

said second auxiliary circuit comprising ~~second~~ controllable second tuning elements, connected between said auxiliary circuit section and said coupling section, having respective non-coinciding first, second and third further control states, the respective further control states of said ~~second~~ controllable second tuning elements being selectively controllable to cause a radio frequency excitation current flowing in the second antenna element sub-section to produce, ~~at respectively different times dependent on the respective control states of the second controllable tuning elements, each of an auxiliary current in the second auxiliary circuit section leading~~ that leads said excitation current in the second antenna element sub-section when said second tuning elements are in said first further control state, ~~[[or]]~~ and an auxiliary current in the second auxiliary circuit section ~~lagging~~ that lags the excitation current in the second antenna element sub-section when said second tuning elements are in said second further control state, ~~[[or]]~~ and no auxiliary current in the second auxiliary circuit section when said second tuning elements are in said third further control state.

5. (Original) An antenna element as claimed in claim 4 wherein said first and second auxiliary circuits are inductively decoupled from each other.

6. (Original) An antenna element as claimed in claim 5 wherein said first and second auxiliary circuits have an overlapping region.

7. (Original) An antenna element as claimed in claim 4 wherein said second controllable tuning elements are selectively controllable independently of said first controllable tuning elements.

Claim 8 has been amended as follows:

8. (Currently amended) An antenna arrangement for magnetic resonance applications comprising:

a plurality of antenna elements disposed parallel to each other; ~~and, each of~~
said antenna elements comprising a sub-section extending along a
section axis, ~~a;~~

an auxiliary circuit disposed adjacent to said sub-section, said auxiliary circuit
comprising a coupling section and an auxiliary circuit section, said
auxiliary circuit being inductively coupled to said sub-section by said
coupling section, and said auxiliary circuit section proceeding parallel
to said sub-section at a larger distance from said section axis ~~[[,]]; than~~
said coupling section; and

said auxiliary circuit comprising controllable tuning elements ~~each, connected~~
between said auxiliary circuit section and second coupling section
having ~~[[a]]~~ non-coinciding first, second and third control state states,
the respective control states being selectively controllable to cause a
radio frequency excitation current flowing in said sub-section to
produce, ~~at respectively different times dependent on the~~
~~representative control states each of~~ an auxiliary current in said

auxiliary circuit section ~~leading~~ that leads said excitation current when
said tuning elements are in said first control state, [[or]] and an auxiliary
current in said auxiliary circuit ~~lagging~~ that lags said excitation current
when said tuning elements are in said second control state, [[or]] and
no auxiliary current in said auxiliary circuit section when said tuning
elements are in said third control state.

9. (Original) An antenna arrangement as claimed in claim 8 wherein said coupling section is a component of said sub-section.

10. (Previously Presented) An antenna arrangement as claimed in claim 8 wherein said coupling section is a different element from said sub-section,

Claim 11 has been amended as follows:

11. (Currently amended) An antenna arrangement as claimed in claim 8 wherein said sub-section is a first sub-section, said auxiliary circuit is a first auxiliary circuit, said coupling section is a first coupling section, said auxiliary circuit section is a first auxiliary circuit section, and said controllable tuning elements are first controllable first tuning elements, and wherein each of said antenna elements further comprises:

a second sub-section axially offset from said first sub-section;

a second auxiliary circuit adjacent to said second sub-section;

said second auxiliary circuit comprising a second coupling section and a
second auxiliary circuit section;

said second auxiliary circuit being inductively coupled to said second sub-section by said second coupling section, and said second auxiliary

circuit section proceeding parallel to said second sub-section at a distance from said section axis; and

said second auxiliary circuit comprising ~~second~~ controllable second tuning elements having respective non-coinciding first, second and third further control states, the respective further control states of said second controllable tuning elements being selectively controllable to cause a radio frequency excitation current flowing in the second sub-section to produce, ~~at respectively different times dependent on the respective control states of the second controllable tuning elements,~~ each of an auxiliary current in the second auxiliary circuit section ~~leading that leads~~ said excitation current in the second sub-section when said second tuning elements are in said first further control state, ~~[[or]]~~ and an auxiliary current in the second auxiliary circuit section ~~lagging that lags~~ the excitation current in the second antenna element sub-section when said second tuning elements are in said second further control state, ~~[[or]]~~ and no auxiliary current in the second auxiliary circuit section when said second tuning elements are in said third further control state.

12. (Original) An antenna arrangement as claimed in claim 11 wherein said first and second auxiliary circuits are inductively decoupled from each other.

13. (Original) An antenna arrangement as claimed in claim 12 wherein said first and second auxiliary circuits have an overlapping region.

14. (Original) An antenna arrangement as claimed in claim 11 wherein said second controllable tuning elements are selectively controllable independently of said first controllable tuning elements.

15. (Original) An antenna arrangement as claimed in claim 8 wherein each of said antenna elements is rod-shaped, and wherein said antenna elements are disposed around an arrangement axis.

16. (Original) An antenna arrangement as claimed in claim 15 wherein each of said antenna elements has opposite ends, and wherein said antenna arrangement further comprises two ferrules respectively disposed at the opposite ends of the antenna elements coupling said antenna elements with each other.

17. (Original) An antenna arrangement as claimed in claim 15 wherein each of said antenna elements has opposite ends, and wherein said antenna arrangement comprises a radio-frequency shield surrounding said antenna elements, and a plurality of capacitors coupling the respective antenna elements to said radio-frequency shield at said opposite ends.